

जलसंपदा विभागातील नवीन नियुक्त  
होण्या-या स. अ. श्रेणी-२ (विद्युत)  
यांच्याकरिता प्रशिक्षण कार्यक्रम.

महाराष्ट्र शासन

जलसंपदा विभाग

शासन परिपत्रक क्रमांक :-संकीर्ण २०१५/१७४/१५/जवि,

नवीन प्रशासकीय इमारत, ६ वा मजला,

मादाम कामा मार्ग, हुतात्मा राजगुरु चौक,

मंत्रालय, मुंबई ४०० ०३२

दिनांक :- ५ डिसेंबर, २०१५

परिपत्रक :-

जलसंपदा विभागातील नवीन नियुक्त होणा-या सहाय्यक अभियंता श्रेणी-२ (विवयां)  
यांचेकरीता खालीलप्रमाणे प्रशिक्षण कार्यक्रम आयोजित करण्यात येईल.

अ.क्र.	प्रशिक्षणाचा टप्पा	कालावधी (आठवडा)	प्रशिक्षणाचे ठिकाण	तपशील
१	नियुक्ती	२	नियुक्ती केलेल्या कार्यालयात कामकाजासाठी रुजू होण्यासाठीच्या आदेशाप्रमाणे.	-----
२	टप्पा-१ (Phase-१)	४	मेटा, नाशिक	सर्वसाधारण, कार्यालयीन कामकाज पध्दती, पारंपारिक जलविद्युत प्रकल्प (विजगृह) + उदंचन योजना
		२	प्रकल्प भेटी	१) कोयना टप्पा ४ ( पारंपारिक विजगृह) २) घाटघर उदंचन जलविद्युत प्रकल्प योजना
३	टप्पा-२ (Phase-२)	४	मेटा, नाशिक	प्रकल्पांची तपासणी, निरीक्षण, गुणवत्तेची हमी, एनर्जी ऑडीट, डिरेक्टिंगची पडताळणी, प्रकल्पाचे परिचालन, देखभाल, प्रकल्पांचे आधुनिकीकरण व अपग्रेडिंग (RMU) करण्याबाबतची माहिती.
		३	मॅन्युफॅक्चरिंग युनिट्स/प्रकल्पस्थळ भेटी	१) पाणचक्की, जनित्र संच, रोहित्र कळयंत्र आवार यंत्रसामुग्री यांच्या उत्पादनांच्या कंपनीना भेट देणे. २) जुन्या प्रकल्पांच्या RMU च्या दृष्टीने अभ्यासपूर्ण भेटी देणे.

अ.क्र.	प्रशिक्षणाचा टप्पा	कालावधी (आठवडा)	प्रशिक्षणाचे ठिकाण	तपशील
४	टप्पा-३ (Phase- ३)	४	मेटा, नाशिक	खाजगीकरणाद्वारे जलविद्युत प्रकल्प विकसित करण्याबाबत धोरणात्मक निर्णय इलेक्ट्रीसिटी अॅक्ट, रेग्युलॅटरी अॅप्रोच, भाडेपट्टी, लहान जलविद्युत प्रकल्प, अपारंपरिक उर्जा स्रोत प्रकल्प, सौर ऊर्जा प्रकल्प, महाराष्ट्र ऊर्जा विकास अभिकरण कामकाज ओळख व समन्वय
		१	प्रकल्प भेटी	लहान जलविद्युत प्रकल्पांच्या स्थळांना भेटी
		१		बॅरेज वरील जलविद्युत प्रकल्प स्थळ (रन ऑफ रिह्वर)
		१		धरणावरील जलविद्युत प्रकल्प स्थळ (धरण पायथा)
		२	मेटा, नाशिक	संकल्पचित्रा विषयक प्रशिक्षण
५	टप्पा-४ (Phase-४)	४	मेटा, नाशिक	उपसा सिंचन योजनांबाबतची विद्युत घटक व यांत्रिकी घटकांची माहिती व परिचलन विषयक माहिती.
		४	प्रकल्प भेटी	उपसा सिंचन योजनांच्या प्रकल्प स्थळांना भेटी (एकूण ४) *बांधकामाधीन उपसा सिंचन योजना (२) (एका योजनेवर एक ग्रुप संपूर्ण १ आठवडा प्रमाणे) **परिचलनातील उपसा सिंचन योजना (२) (एका योजनेवर एक ग्रुप संपूर्ण आठवडा प्रमाणे)
६	टप्पा-५ (Phase-५)	४	मेटा, नाशिक	निविदेबाबत, कंत्राट व्यवस्थापन, अर्बिट्रेशन /डिस्प्यूट रिझोल्युशन व इतर सर्वसाधारण विषयांबाबतची माहिती.
७	टप्पा-६ (Phase-६)	४	क्षेत्रीय प्रशिक्षण	जलसंपदा अंतर्गत असलेल्या विविध कार्यालयाची व जलविद्युत प्रकल्प साईटसची माहिती, बॅरेजवरील जलविद्युत प्रकल्प व मोठ्या धरणावरील जलविद्युत प्रकल्पाकरीता साईटस वरील विद्युत अभियंत्यांच्या जबाबदा-या जाणून घेणेसाठी किमान एक आठवडा एका साईटवर वास्तव्य या प्रमाणे प्रकल्पभेटी.

अ.क्र.	प्रशिक्षणाचा टप्पा	कालावधी (आठवडा)	प्रशिक्षणाचे ठिकाण	तपशील
		३		मूळ कार्यालयात कामाचा अनुभव
		३		प्रकल्प अहवाल तयार करणे (लहान जलविद्युत प्रकल्प/उपसा सिंचन योजना/नूतनीकरण आधुनिकीकरण)
		२	इन्स्टीट्यूट ऑफ एस.एच.पी., रुरकी	लहान जलविद्युत प्रकल्प विषयक प्रशिक्षण (सदर प्रशिक्षणाबाबतचे मॉड्यूल इन्स्टीट्यूट सोबत चर्चा करून अंतीम करावे)
८	टप्पा-७ (Phase-७)	४	मेटा, नाशिक	ई- जलसेवा, नवीन तंत्रज्ञानाचा वापर, बांधकाम व्यवस्थापन संगणक आज्ञावलीचा वापर इत्यादी बाबत प्रशिक्षण व संपूर्ण प्रशिक्षणावर आधारित परीक्षा, परीक्षा पास न होणा-या प्रशिक्षणार्थीस पास होईपर्यंत पुन्हा परीक्षा द्यावी लागेल.
प्रशिक्षणाचा एकूण कालावधी ५२ आठवडे				

सदर प्रशिक्षण कार्यक्रमांतर्गत प्रकल्प भेटी या किमान एक आठवडा एका प्रकल्पस्थळी वास्तव अशा असतील. प्रकल्प भेटीनंतर या प्रकल्पावरील विद्युत अभियंत्याच्या जबाबदा-यांबाबत प्रशिक्षणार्थींनी अभ्यास अहवाल सादर करावा.

मेटा, नाशिक येथील व्यावसायिक प्रशिक्षण अभ्यासक्रमाची विषयसूची सोबत जोडलेल्या विवरणपत्रात आहे. उपरोक्त प्रशिक्षण कालावधीत प्रशिक्षणार्थींना प्रत्येक दिवशी त्या दिवसाची दैनंदिनी ऑन लाईन सादर करणे आवश्यक राहिल.

सदर शासन निर्णय महाराष्ट्र शासनाच्या [www.maharashtra.gov.in](http://www.maharashtra.gov.in) या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेतांक २०१५१२०७१३०७४५५६२७ असा आहे. हा आदेश डिजिटल स्वाक्षरीने साक्षांकित करून काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने.

सोबत :- वरीलप्रमाणे

प्रति,

- १) प्रधान सचिव ( जलसंपदा /लाक्षेवि ), जलसंपदा विभाग, मंत्रालय, मुंबई
- २) सर्व कार्यकारी संचालक, जलसंपदा विभाग,

( र. रा. शुक्ला )

शासनाचे उप सचिव

- ३) सर्व महासंचालक, जलसंपदा विभाग,
- ४) मुख्य अभियंता (विद्युत), जलविद्युत प्रकल्प, मुंबई
- ५) सर्व मुख्य अभियंता, जलसंपदा विभाग,
- ६) सर्व मुख्य अभियंता व सह सचिव, जलसंपदा विभाग, मंत्रालय, मुंबई,
- ७) सह सचिव (सेवा), जलसंपदा विभाग, मंत्रालय, मुंबई,
- ८) उप सचिव (प्रशा), जलसंपदा विभाग, मंत्रालय, मुंबई,
- ९) उप सचिव (जवि), जलसंपदा विभाग, मंत्रालय, मुंबई,
- १०) सर्व अधीक्षक अभियंता, जलसंपदा विभाग,
- ११) स.अ. श्रेणी-२, कार्यासन, जलसंपदा विभाग, मंत्रालय, मुंबई
- १२) जलविद्युत कार्यासन संग्रहार्थ.

**APENDIX**

GOVERNMENT OF MAHARASHTRA,  
WATER RESOURCES DEPARTMENT  
MAHARASHTRA ENGINEERING TRAINING ACADEMY, NASHIK

NAME OF THE COURSE : - Induction training Course for Newly Recruited AE-II (E&M) in Water Resources Department.  
DURATION OF THE COURSE : - 52 Weeks META, Nashik with site visits.

Sr.No.	Topics
1	<b>Details of Training ( PHASE -I ):-</b> 1) Introduction, working and set up of WRD, Organizational hierarchy: Mantralaya, Regional heads, CE, SE, EE etc., Various Institutions, MERI, CDO, META, WALMI etc. 2) Work under Hydro organisation. 3) Office Procedures. 4) Conventional Hydro Power schemes . 5) Pumped storage Hydro Power schemes. 6) Investigation & preparation of Projects . 7) Components of Hydro Power Projects . 8) Components of Hydro Power House. 9) Nature of works to be executed by WRD eg. Hydro Projects, Lift Irrigation Scheme etc. Source of funding to Dept. & their distributions at various levels, Responsibilities of various Officers from Secretary to DE level, Specifically duties of Officer in charge. 10) Planning of Hydro Project, Preliminary survey, Collection of field data, Preparing Scrutinising estimates, Preparation of Project Report. 11) General Layout of Power House. 12) Power evacuation, Design of E & M Equipments of Hydro Projects. 13) Water Conductor system- Intake gates/trash rack/penstock/surge/tailrace/DT gate/trash rack/MIV/BFV/Bye pass valve. 14) Different types of Valves, Selection/ Capacity of the Main Inlet Valve (MIV)/ BFV/ Draft Tube gate, etc., Construction details of Valves, ETC & operation and Maintenance of Valves. 15) Different types of Turbines. Selection of the Turbines. Construction details of Turbines & its associated auxiliaries. ETC & Operation and Maintenance of Turbine. 16) Schematic diagram of governing system, required Instrumentation for governing system, Guide Vane operation, ETC and O & M of the above, All Safety Devices for main T /G. 17) Different types of Generator, Selection of the Generator. Construction details of Generator & its associated auxiliaries. ETC & Operation and Maintenance of Generator. 18) Details of SFC (Static Frequency Converter) ETC of the SFC. 19) Control and protection system for T/ G plant, SCADA system. 20) Cooling Water system, Drainage & Dewatering, Compressed Air System & Air Handling Unit (AHU), OPU, Oil system. 21) Designing of Earth mat for Power House & Switchyard. Earthing requirements of Transformer and other equipments, Laying & Testing of Earth mat. 22) Selection / Capacity of EOT crane, Construction details of the EOT Crane ETC and O & M of the EOT Crane. 23) Different Types/ Selection/ Capacity of the Power Transformer, Construction details of Power Transformer, Protection system for Power Transformer, ETC and operation and maintenance of Power Transformer. 24) Different Types / Selection Capacity of the UAT/ SAT, Construction details of UAT/ SAT, Protection System for UAT/ SAT, ETC and operation and maintenance of UAT/ SAT. 25) Design of A CLT & DC Distribution system, Battery, Battery Charger& D G set ETC and O & M.

Sr. No.	Topics
	<p>26) Layout of switchyard , Different Types of (AIS/GIS) switchyard, Selection/ Capacity of switch yard equipment viz. CB, CT, PT ISO, LA, BUS BAR equipments, Selection of bus bar system, Control and Protection system for switchyard, Fault level calculation and proactive measures, ETC of switchyard equipments.</p> <p>27) Selection /Size of H T Power Cables, Control cables, study of schematic diagram, cable schedules, cable termination for overall control and Protection system of power house &amp; switchyard.</p> <p>28) Illumination and electrification of the power house, switchyard , D C lighting system</p> <p>29) Designing of Fire Detection and Fire Hydrant protection system for power house and switch yard, Erection, Testing, Commissioning and setting up of Standard Operating procedures with respect to the periodical maintenance schedule.</p> <p>30) Designing of Air Conditioning system for Power House, ETC &amp; operation and Maintenance of AC system.</p> <p>31) Types of Electrical lifts, Selection of Lift for power house, ETC and O&amp;M of Elect lifts.</p>
2	<b>Details of Training (Phase II):-</b>
	<p>1) Standard Operating Procedure ( SOP) / Work Instructions for safe and effective operation of power house, Half yearly / yearly, overall maintenance of power house, taking readings of meters &amp; maintaining the instruments of the power house &amp; switchyard.</p> <p>2) Preparing /PERT/ CPM/ BAR chart Techniques for overall project using software</p> <p>3) Pre &amp; Post Monsoon Inspection of HEP.</p> <p>4) Operation and Maintenance of LIS.</p> <p>5) Instrumentation of dams, pre monsoon &amp; post monsoon inspection.</p> <p>6) Need for safety to personnel and equipment, IE Rules.</p> <p>7) National Building Code of India Part 4 Fire and Safety.</p> <p>8) Personnel Safety, Equipment safety, Layout of Project considering Safety aspect.</p> <p>9) Fire Fighting System, Insurance.</p> <p>Accidents, Legal &amp; Procedures, Disaster Management.</p> <p>10) Importance of Energy audit, Rules &amp; conduct of Energy audit.</p> <p>11) Inspection of Power House .Effective Testing &amp; determination of derating of Power House &amp; its need for RMU.</p> <p>12) Inspection and testing of E&amp; M equipments at factory &amp; work site . ( List of various tests of equipments is attached), Monitoring of Hydro projects &amp; switchyard of LIS.</p>
3	<b>Details of Training (Phase III):-</b>
	<p>1)Scenario of SHP in Maharashtra, India Policies and Programme in SHP Development in India and Maharashtra. Procedure and various stages involved in Allotment of SHP to Private Company, Preparation of TEFR &amp; scrutiny of TEFR. Power Trading, Financing and Tariff Determination, Economics and Financial Analysis, Power Purchase Agreement, Role and Responsibility of GOMWRD and Promoter.</p> <p>2) Privatisation policy &amp; different clearances required, etc. Prescribed format / Procedure for Land Acquisition / Forest clearance. Railway, P. T. C.C. &amp; Road Clearances for Transportation / Erection of Transmission Line &amp; its clearances. Safety precautions as per the Factory Act for power house. Factory Inspector clearances, Electrical Inspector clearances. MAHAGENCO / TRANSCO / MSEDCL / Clearances</p> <p>3) National Hydro Policy. Central Electricity Authority Guide lines. Non- conventional Energy Sources.(MNRE schemes). Indian Electricity Act 2003. Project Finance, MNRE subsidy. Issues regarding Power Grid Regulatory Authorities-CERC, MERC. Important MERC Orders related to WRD. Tariff Policy.</p>

Sr. No.	Topics
	4) Policies of State & Central Govt. regarding Solar Power. 5) Lectures by MEDA faculties to get acquainted with MEDA's role in Power sector ,office procedure and co-ordination with MNRE etc.
4	<b>Details of Training (Phase IV):-</b>
	<u>3 weeks training before site visits :-</u> 1) Fundamentals of Lift Irrigation Scheme. General Layout of LIS. 2) Before LIS site visits the Electrical Engineer shall be made aware of the fact that in future LIS is to be operated either by Electrical or Mechanical Engineer. Therefore Engineer must be capable of handling all Electro-Mechanical subjects related to LIS. 3) Design of load requirements for Pumping machinery Transformer capacity, cables & other Electrical equipments, fault MVA, selection of switchgear, power supply line. 4) Layout of switchyard. 5) Erection, Testing, Commissioning of switchyard & transmission line. 6) Design & Erection of Mechanical Equipments. 7) Interrelated activities of Civil & Mechanical wing. 8) Operation & Maintenance of LIS . <u>1 Week training after site visits:-</u> The rigorous discussion session to answer the doubts and solve the difficulties of Trainees.
5	<b>Details of Training (Phase V):-</b>
	1) Project Management. Administrative approval for the project, technical sanction. Estimate for the project & equipment. Tendering process, Preparation of DTP sanction of tender, Evaluation of tender, formation of contract agreement.  2)Preparation of project report, Introduction to preparation of detailed estimates ( original & revised), CSR, Precautions to be taken while preparing original estimates & revised estimates, Power to sanction of estimates & revised estimate.  3) Indian Contract Act 1872,FIDIC Contracts Execution of work by department, various types of contract, rate list, A-1,A-2, B-1, B-2 , C , ICB, NCB & LCB etc Working in WRD, Tendering process, Preparation of DTP, sanction of tender,  4) Various tender conditions/clauses,EMD, security deposit, preparation of RA bills & final bills, defect liabilities etc. Opening of tender, Tender evaluation & issue of work order, formation of contract agreement, claims, dispute, DRB, Arbitration.  5) Various types of advances to the contractors, procedure of recovery of advances, tender notice, e- tendering & its procedure. Price escalation extra items extension of time limit of contracts etc.  6) Importance of measurement book, issue of measurement book, precaution to be taken while recording measurement, powers of recording measurement, Percentage check by various Officers viz. JE-AE/DE/EE.  7) Maharashtra Public Works account code, Accounting procedure of WRD & corporations, Budget, LOC/Non LOC, MOF of BEAMS (BDS),Imprest account and temporary advance to JE/AEII. Cash & cash account, Audit paras & their reply, Public Account Committee.  8) MPW manual & important provisions there in.  9) JBIC world bank, Asian development bank, PFC, MNRE, REC- funding procedure & their accounting procedure.  10) M.C.S.R rules 1981, Conduct rules & regulations, Disciplinary authority , Joining time, T A bills, ETA bills, pay leave rules etc.  11) Various types of establishment, professional exam, Maharashtra discipline & appeal rule 1979, Dismissal & removal, suspension & payment during suspension. GPF, GIS, GPF loan, recovery of loan, Housing loan, Computer loan, vehicle loan to GOVT Employee and their recovery.

Sr. No.	Topics
	<p>12) Departmental enquiry procedure, Penalties &amp; punishment, Maharashtra administrative tribunal act 1985, confidential report its important in service and communicating the CR.</p> <p>13) Appointment of Information Officer and his duties, introduction of Right to Information Act 2005, Various provisions &amp; operations, Procedure of giving Replies, Penalty for delays in replies, case study of RTI ACT, prevention and action to be taken.</p> <p>14) Introduction to effective office management, challenges in office management.</p> <p>15) Information &amp; record management, destruction of old record rules &amp; procedure, e- governance , preparation of meeting booklet, Management technique and skill.</p> <p>16) Personality development, Communication Skill, Writing And Drafting Stress management, Time management.</p> <p>17) Moral ethics and spiritual values, Organisation ethics.</p>
6	<b>Details of Training (Phase VI) :-</b>
	<p>1. Various offices under Hydro Organisation and Hydro Electric Projects sites. The site visit shall comprise. One week stay at site to know the responsibilities of Electrical Engineer at site. Trainee will visit at least one Major Dam Hydro Electric Project site and one Small Hydro Electric Project on Barrage , during this period.</p> <p>2. Training / Experience of work at the office where the trainee is posted.</p> <p>3. To prepare project Reports for SHP/LIS/RMU.</p> <p>4. Training at National Institute of SHP Roorkee ; As per module designed in consultation with Institute.</p>
7	<b>Details of Training (Phase VII) :-</b>
	<p>1) E-JALSEWA.</p> <p>2) Application of Technology like Remote sensing Geographical Information System, Bhuvan Portal, e –jalshruti etc.</p> <p>3) Application of CPM/PERT based Project Management Software.</p> <p>4) Group-wise Report Presentation, Group discussion, Sharing of experience, Paper Presentation and test on above topics.</p> <p>5) Examination/Test based on the entire Training.</p> <p>6) Concluding Function ( view/feed back, sports and Cultural Programme)</p>

**( R. R. SHUKLA )**  
 Deputy Secretary  
 Govt. of Maharashtra